



## **Road Cyclists Lactate Profiling & Aerobic Capacity Assessment Package**

The Ulster Sports Academy is offering a special assessment package for road cyclists. The test procedures take approximately 1 hour 30 mins and will provide cyclists with a very detailed report to boost their training. The exercise component of the test is carried out in the only British Association of Sport and Exercise Sciences (BASES) accredited laboratory on the island of Ireland and completed on a state of the art SRM cycle ergometer. Cyclists should abstain from strenuous exercise for 2-3 days before the test. They should arrive motivated, free from injury or illness and be well hydrated. Cyclists can wear their own heart rate monitors and fit their cleats to the SRM ergometer. They can also adjust the sizing of the bike to meet their individual needs. The assessment is outlined into the following sections:

### **1. Anthropometric Measurements**

This includes height, body mass and body composition analysis (body fat percentage). Body composition is analysed using skin-fold callipers. This technique involves pinching fat tissue at different sites of the body. The values obtained give an indication of body fat levels.

Why is this important?

If you are carrying excessive body fat it will be counterproductive to endurance exercise performance. Basically, you are carrying deadweight that will slow you down and make hill climbing much more difficult.

Individuals can opt to have body composition analysed via bioelectrical impedance, which is a less invasive method. It does not require the individual to remove clothing. Instead, a small electrical device is connected, by electrodes, to the hand and foot and readings are obtained.

### **2. Hydration Status**

Athletes' hydration status is measured by analysing the concentration of a urine sample, using a micro osmometer.

Why is this important?

As little as 2% dehydration will negatively impact upon endurance performance. We can help you ensure you are drinking enough fluids.

### **3. Resting Blood Analysis**

A small sample of blood is collected via a finger prick and analysed for haemoglobin content and haematocrit levels.

Why is this important?

Endurance athletes require haemoglobin molecules to carry oxygen to the working muscles. The haematocrit reading represents the percentage of formed elements in the blood (mainly red blood cells) and it is important that these fall within a healthy range. If either haemoglobin or haematocrit levels are low an athlete may require an intervention to be actioned by their G.P

#### **4. Single Leg Strength Test**

Maximal strength levels between the right and left leg will be assessed using a dynamometer.

Why is this important?

Cyclists will commonly have an imbalance in leg strength between right and left legs. Measuring the strength levels will establish if a strength & conditioning intervention is required.

#### **5. Double Leg Power Assessment (squat jump)**

Using an electronic jump mat we will measure indices of double leg power.

Why is this important?

Having superior levels of leg power is important for the cyclist and has implications for a cyclist's power to weight ratio. Tracking levels can provide information on the success or failings of a strength & conditioning programme and the whole training programme in general.

#### **6. Single Leg Hamstring Flexibility**

Using a goniometer we will assess hamstring flexibility with an active straight leg raise test.

Why is this important?

Cyclist will typically suffer from a lack of flexibility in the hamstring muscle group, caused by long hours on the bike. A lack of hamstring flexibility can affect positioning on the bike and long term it can contribute to low back pain. Additionally, if the hamstring muscle group is tight it will limit the exercises that the cyclist can use for improving leg strength and power that could improve performance. It is a prerequisite to have adequate hamstring flexibility before using exercises such as squatting movements and Olympic lifts in a conditioning programme. These are the most effective exercises for developing strength and power. Measuring hamstring flexibility and using stretching interventions will ensure that the cyclist has optimal flexibility.

#### **7. Lactate Profile Assessment**

Cyclists will be put through a progressive exercise test to establish how their body responds to different exercise intensities. The response to exercise is measured by tracking the heart rate and blood lactate levels. Blood lactate is measured by taking capillary blood samples – this will require taking a very small sample of blood from either the tip of a finger or the ear lobe.

Why is this important?

This information will be used to structure heart rate training zones for 3-4 months. They will range in intensity and be specific to individual fitness levels. This procedure establishes individualised heart rate training zones for each cyclist to train at, removing the guess work from training. This process will also establish your particular lactate thresholds and give sub maximal exercise markers that are very important to cycling performance because they reflect the pace of most distance events. This is superior to structuring training from age predicted heart rate zones.

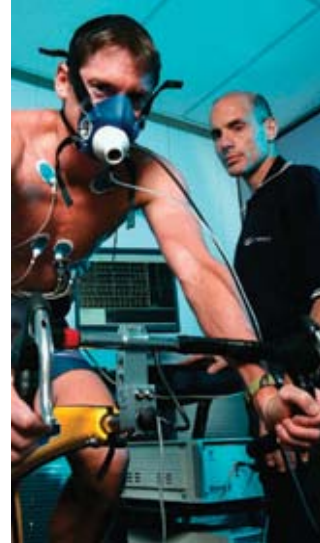
## 8. A $\dot{V}O_{2max}$ Test

This involves connecting the cyclist to a gas analysis system that will calculate how much oxygen the body can extract and use during exercise.

Why is this important?

The higher these levels are the more a cyclist is suited to endurance exercise and different types of cycling – track/time trial/road race. Furthermore, improvements in the value will support the fact that your training is working and fitness levels improving. This part of the test requires you to really push yourself and we only conduct this with healthy and fit individuals.

In this section of the test we will also establish a cyclist's power to weight ratio – very important for hill climbs!



**Figure 1 An individual performing a  $\dot{V}O_{2max}$  assessment**

## 9. Recovery Training Session

After all your hard efforts relax in our recovery suite and soothe away your aches and pains.

Why is this important?

The recovery suite contains a steam room, ice cold plunge pool and warm Jacuzzi. Alternating between these treatment areas will accelerate recovery and have you feeling rejuvenated.

## 10. The Follow Up Report

The report will detail all of our findings and help you towards new found levels of performance.

The comprehensive support package is now available for £120 per person for tests carried out during the hours of 09.00-16.00 Monday to Friday and £140 for tests carried out in the evenings or at weekends. Discounts or free services (a cycling specific strength & conditioning programme) can be organised for clubs or groups who wish to book in a group of five or more individuals for the test package.

Why not give your training a boost and recruit the experts at the Ulster Sports Academy.

For further information or bookings contact Maria Faulkner, B.Sc., M.Sc. on 02890 368154 e mail [m.faulkner@ulster.ac.uk](mailto:m.faulkner@ulster.ac.uk) Or William Moore, B.A.(Hons), M.Sc, C.S.C.S, A.S.C.C on 02890 366028 e mail [wb.moore@ulster.ac.uk](mailto:wb.moore@ulster.ac.uk)

For further information on the range of athlete support services from the Ulster Sports Academy, including nutritional, strength & conditioning or psychological support visit the website at [www.sportsulster.com/performance-services.php](http://www.sportsulster.com/performance-services.php)